Love Panta

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Education

- **Bachelor in Electronics, Communication and Information Engineering** *Lalitpur, Nepal*
  Pulchowk Campus, Institute of Engineering 2018 - 2023
  Relevant Courses: Data Structure and Algorithms, DBMS, AI, Data Science, Data Mining, Big Data
  - Ranked in top 2% among 18000 applicants in entrance examination
  - Graduated with first division, scoring 71.56%

Skills

- **Programming Languages:** C/C++, Python, Matlab
- **Data Science & AI:** Pytorch, Tensorflow, Monai, Pandas, Scikit
- **Robotics:** ROS1/ROS2, RTOS, Kicad, Proteus, Embedded programming(AVR/ARM), Coppeliasim
- **Other Tools & Technologies:** Git, latex

Experience

- **AI Research Assistant** *Kathmandu, Nepal*
  Wiseyak Solution Pvt. Ltd. —Supervisor: Dr. Suresh Manandhar July 2023 - Current
  - Research and development of **deception detection AI models**, including facial expression analysis **(Emotion and Action Units detection)**, writing a **survey report** on current AI trends on various aspects influencing deceptive behavior, and collaborating with various authorities across the country.
  - Development of recent state-of-the-art AI model using **Convolution Vision Transformer as encoder and distilgpt2 as decoder for automatic report generation** of chest X-ray images and multi-label classification. This includes the visualization of **class activation maps** (grad-cam) triggering those diseases.
  - Research and development of a **low-cost automatic cervical screening platform** for developing countries, focusing on automated slide analysis and report generation using AI-assisted automated microscopes for Cytology. Generative models **(GAN, VAE, and Diffusion models)** are utilized for the automated synthesis of colposcopy images to address limited data for cervical cancer detection in the next phase.

- **AI Research Intern** *Kathmandu, Nepal*
  Wiseyak Solution Pvt. Ltd. —Supervisor: Dr. Suresh Manandhar Jan 2023 - June 2023
  - Research on **transformer based multi-model architecture** in domain combining visual sequence information and sentence query for retrieving moment in the videos given the text queries as part of final year project
  - Publication of a paper in the renowned **IEEE/CVF conference(WACV)**.

- **Robotics Research and Development Intern** *Korea*
  NSDEVIL Feb 2023 - May 2023
  - Research and development of the fully functional **autonomous differential drive robot** which does the tasks of navigating while carrying the payload around the deployed environment, avoid the dynamic obstacles and follow the client to get to the desired locations.
  - Integration of different sensors such as Lidar, encoder, IMU, camera etc on **ROS2** with the use and development of different packages and algorithms.

- **Robotics Research Member** *Lalitpur, Nepal*
  Robotics Club, Pulchowk Campus 2019 - 2022
  - Participation in International Robotics Competition i.e ABU ROBOCON 2020, 2021 and 2022
  - Team Leader in ROBOCON 2021 and build the fully autonomous arrow throwing robot and manual guided robot with the core research in fuzzy logic controller over manual pid controller, Integration of ROS along with development of different localization and path planning packages with use of different sensors such as lidar, IMU, encoder and so on.

- Worked as the circuit designer and learner for the rugby throwing robot in ABU ROBOCON 2020, Mentor and problem solver for the junior members in ROBOCON 2022.
- Conduct different workshop sessions to give hands-on-training for bachelor students.

- **ELECTRONICS HEAD** *Lalitpur, Nepal*
  INCUBATION, INNOVATION AND ENTREPRENEURSHIP CENTER, PULCHOWK CAMPUS Oct 2021 - Apr 2022
  - Build the fixed wings UAV for the AIAA DBF 2022 which carry the syringe as payload and deploy it in the target locations.
  - Design and programmed the 3D-foam cutter along with the circuits needed for the ESC calibrations and the conveyor mechanism for payload.

Selected Academic Projects

- **Natural Language Query Grounding in Video**
  Graduating Capstone Project —PDF [GitHub]
  - Research on novel multi-model learning method achieving SOTA performance along with publication on **IEEE/CVF conference(WACV)**

- **Multi-Agent Reinforcement Learning for the dodge-ball game in 3D environment**
  Minor Capstone Project —PDF [GitHub]
  - A multi-agent actor-critic algorithm called MADDPG is applied to learn the collaborative and competetive behavior in the dodge ball game where we compare the two approaches i.e curriculum learning along with self play and learning from scratch to show how fast the agent could learn the given policy.

- **RL-SAC for Dynamic Trajectory Tracking in Omni-drive Robot**
  Independent Research Project —In progress
  - Soft Actor-Critic along with curriculum learning is utilized to develop optimal control method for trajectory tracking in an Omni-drive robots.
  - Platform called Coppeliasim is integrated with Matlab via external Api to simulate the performance of driving agent.

Patents and Publications

- **Panta L**, Shrestha P, Sapkota B, Bhattarai A, Manandhar S, Sah AK., Cross-modal Contrastive Learning with Asymmetric Co-attention Network for Video Moment Retrieval, WACVW, 2024.
- **Panta L.**, Comparative Analysis of NMPC and Fuzzy PID Controllers for Trajectory Tracking in Omni-Drive Robots: Design, Simulation, and Performance Evaluation, International Journal of Fuzzy Systems, 2024. *(IF: 4.3)*
- **Panta L**, Prasai S, Vaidya KM, Shrestha S, Manandhar S., AI Assisted Cervical Cancer Screening for Cytology Samples in Developing Countries, 2024 *(Under Review)*
- Deception Detection: A Review of Psychological Theory and Machine Learning Approaches *(Confidential Survey Report)*

Honors and Awards

- **Second Runner up at SmartBots Coding Challenge** *2023*
  Build the smart AI bot for 29 points card game using information set monte carlo tree search algorithm, competing among 94 teams
- **Second Runner up in Global Coding Challenge 2022 —Credit Suisse** *Nov 2022*
  Global Ranked 32 out of 2000+ participants to solve competitive Programming challenges
- **Second Runner up and Nagase Award in ABU ROBOCON 2022** *2022*
  Robotics Club, Pulchowk Campus
- **Tokyo Electron Award in ABU ROBOCON 2020** *2020*
  Robotics Club, Pulchowk Campus
- **Full Academic Scholarship** *2018 - 2023*
  An undergraduate scholarship to cover full tuition fees, granted based on exceptional performance in the entrance exam.